

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

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|--|---|---|
| Applicant's or agent's file reference 664229 | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/JP 03/15904 | International filing date (day/month/year) 11/12/2003 | (Earliest) Priority Date (day/month/year) 11/12/2002 |
| Applicant AMMONO SP. Z O.O. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

contained in the international application in written form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. Certain claims were found unsearchable (See Box I).

3. Unity of invention is lacking (see Box II).

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

PROCESS FOR OBTAINING OF BULK MONOCRYSTALLINE GALLIUM-CONTAINING NITRIDE

5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

1

None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/15904

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C30B9/00 C30B29/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C30B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|--|-----------------------|
| A | FR 2 796 657 A (THOMSON CSF) 26 January 2001 (2001-01-26) cited in the application page 6, line 10 - page 8, line 18 ----- | 1-4,17 |
| P,A | WO 02/101120 A (KANBARA YASUO ; NICHIA CORP (JP); DORADZINSKI ROMAN MAREK (PL); DWILIN) 19 December 2002 (2002-12-19) cited in the application ----- | 1-17 |
| A | WO 98/55671 A (GRZEGORY IZABELLA ; KRUkowski STANISLAW (PL); WROBLEWSKI MIROSLAW () 10 December 1998 (1998-12-10) the whole document ----- | |
| A | US 6 177 057 B1 (PURDY ANDREW P) 23 January 2001 (2001-01-23) ----- -/- | |

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

| | |
|--|--|
| Date of the actual completion of the international search 25 May 2004 | Date of mailing of the international search report 03/06/2004 |
| Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 | Authorized officer Cook, S |

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 03/15904

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| A | KETCHUM D R ET AL: "Crystal growth of gallium nitride in supercritical ammonia" JOURNAL OF CRYSTAL GROWTH, NORTH-HOLLAND PUBLISHING, AMSTERDAM, NL, vol. 222, no. 3, January 2001 (2001-01), pages 431-434, XP004314417 ISSN: 0022-0248 cited in the application | |
| A | DWILISKI ET AL: "AMMONO method of BN, AlN and GaN synthesis and crystal growth" MRS INTERNET JOURNAL NITRIDE SEMICONDUCTOR RESEARCH, 'Online! vol. 3, no. 25, 1998, XP002235467 Retrieved from the Internet: URL: http://nsr.mij.mrs.org/3/25 'retrieved on 2003-03-20! cited in the application the whole document | |
| A | YANO M ET AL: "CONTROL OF NUCLEATION SITE AND GROWTH ORIENTATION OF BULK GAN CRYSTALS" JAPANESE JOURNAL OF APPLIED PHYSICS, PUBLICATION OFFICE JAPANESE JOURNAL OF APPLIED PHYSICS. TOKYO, JP, vol. 38, no. 10A, PART 2, 1 October 1999 (1999-10-01), pages L1121-L1123, XP000891127 ISSN: 0021-4922 | |
| A | PATENT ABSTRACTS OF JAPAN vol. 1998, no. 05, 30 April 1998 (1998-04-30) & JP 10 007496 A (HITACHI CABLE LTD), 13 January 1998 (1998-01-13) abstract | |
| A | GB 2 326 160 A (HITACHI CABLE) 16 December 1998 (1998-12-16) | |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/15904

| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
|--|----|------------------|--|---|--|
| FR 2796657 | A | 26-01-2001 | FR | 2796657 A1 | 26-01-2001 |
| WO 02101120 | A | 19-12-2002 | PL PL CN CN CN EP WO WO WO WO JP TW US US US WO WO WO | 347918 A1 350375 A1 1463307 T 1463308 T 1463309 T 1405936 A1 02101120 A2 02101124 A1 02101125 A1 02101126 A1 2003040699 A 546272 B 2002192507 A1 2002189531 A1 2004089221 A1 03043150 A1 03036771 A1 03035945 A2 | 16-12-2002 05-05-2003 24-12-2003 24-12-2003 24-12-2003 07-04-2004 19-12-2002 19-12-2002 19-12-2002 19-12-2002 13-02-2003 11-08-2003 19-12-2002 19-12-2002 13-05-2004 22-05-2003 01-05-2003 01-05-2003 |
| WO 9855671 | A | 10-12-1998 | PL AT DE DE EP JP WO US | 320392 A1 211189 T 69803067 D1 69803067 T2 0986655 A1 2002513375 T 9855671 A1 6273948 B1 | 07-12-1998 15-01-2002 31-01-2002 18-07-2002 22-03-2000 08-05-2002 10-12-1998 14-08-2001 |
| US 6177057 | B1 | 23-01-2001 | | NONE | |
| JP 10007496 | A | 13-01-1998 | | NONE | |
| GB 2326160 | A | 16-12-1998 | JP DE GB GB JP TW US | 11060394 A 19826003 A1 2333520 A ,B 2333521 A ,B 11189498 A 519551 B 6270569 B1 | 02-03-1999 24-12-1998 28-07-1999 28-07-1999 13-07-1999 01-02-2003 07-08-2001 |